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***Computer Standards Committee
Final Report
June 7, 2002***

***Commissioned by:
Computing and Communications Services Advisory
Committee***

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Executive Summary

Overview

The CSAC Computer Standards Committee (CSC) was created in October 2001, consisting of 12 members. The committee met regularly up to the generation of the draft report, meeting at first on a bi-weekly basis, transitioning to a weekly basis in 2002. The committee heard 14 formal presentations from representatives of various ITSD resource experts and user groups. The committee selected topics of interest based on perceived areas of improvement in ITSD services under constant funding. The collective expertise of the committee assessed each topic and, based on their knowledge and input from expert sources, formed the recommendations reported in this report.

The most significant result of the CSC effort is that instead of restricting the nature of computing, as many expected, we are expanding it because specific platforms are appearing to be less of an issue and “Lifeline” services and cross-platform browser compatibility are becoming the greater issues. There is also a recognition that ITSD does not have to support all browser-platform combinations. Rather, a set of lifeline applications has been agreed upon and broad support is only required in these key areas. In addition, as technology and business practices (licensing for example) are changing rapidly, the suggestions will be highly time-dependent.

The committee identified two audiences for its recommendations – ITSD, which provides or supports many of the services, and Users, the Lab employees who use those services. The following table lists the areas reviewed and the number of recommendations submitted by the committee.

Topic	# Of recommendations
Corporate (and “Lifeline”) business applications	2
Web browsers	3
Standard web application development tools	8
Document interchange	6
Open-source software	1
Procurement assistance	6
Desktop hardware and software support	4
Macintosh support	References other sections
Scientific workstation support (UNIX/Linux)	4
Backups and archiving	4
Informal centers of excellence	3
Laptops/PDAs	4

Major Themes

The controversy over which desktop platform Lab users should buy (as epitomized by the Mac vs. PC debate) has been replaced by which Web browser we have to use. The reason for this is

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that software deployment is moving from Client/Server to Web, making the choice of browser (and also its implementation on a specific operating system) the key issue. Browser support is market-driven and LBNL is a major user of commercial packages that depend on these trends. As a result, ITSD must begin supporting Internet Explorer to the same extent as it currently supports Netscape.

The issue of supporting Microsoft's Internet Explorer and Netscape's Navigator browsers across multiple computer platforms is essential to provide access to seven critical "lifeline" business and infrastructure applications - electronic mail, calendaring, LETS, Procurement card, IRIS, Employee Self-Help, and Asset Management (AMS). Other applications have a more restricted subset of users and therefore can be developed or deployed with less emphasis on cross-platform, cross-browser support.

In order to lower the overall cost to the customer, Basic Ordering Agreements (BOAs) and the use of Pcard should be extended to Linux and Mac users, not just the traditional buyer of a Windows operating system. Currently, purchases under Lab BOAs account for less than one-third of the computers purchased by the Lab.

Central support for computer equipment procured via a Basic Ordering Agreement should be accompanied by a provision for maintenance. Maintenance can be outsourced for business reasons, but high-volume equipment should receive consideration for in-house support.

Waivers allowing purchase of non-standard computers should be considered as an acknowledgement of central support issues and not as a barrier to procurement (and the mission of a given group of scientists). The acknowledgement should be at the lowest possible level (requester and the person who has signature authority for the project ID.).

The continued decentralization of UNIX/Linux workstations (more users are independently installing and using Linux workstations and servers) may have an impact on cybersecurity if professional system administration is not available through local work group expertise or from CIS. Users must accept the responsibility for making sound decisions in this area.

Longer term, PDAs may have to be part of the software deployment consideration. At present they are involved only with calendar synchronization, but the scope could be increased.

Responsibility for ensuring the safety of data on computers through a backup and archive strategy must be made visible to the PI or line manager. CIS must provide cost-effective alternatives for both.

Technologies used by ITSD to develop and deploy enterprise software solutions should be standardized around a subset of the available tools. These tools should be publicized to the Lab in order to allow developers in other divisions to be aware of these standards, should integration with or support from ITSD become necessary in the future. While the Lab should continue to use applications and systems meeting industry standards, we should also be a leader in adopting new standards. Open-source software (in particular the Open Office/Star Office desktop productivity software) should be investigated and considered for ITSD support.

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Interoperability between different systems and users often depends on a standard for document interchange. PDF files for read-only are a preferred solution. De facto standards built upon Microsoft extensions are also inevitable. Documents with a high use at the Lab should be built with cross-platform considerations in mind. (P2R forms, for example).

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List of contributors and presenters

Committee members

John Staples (chair), Paul Barale (recording secretary), Chuck Axthelm, Alessandra Cicio, Ron Huesman, Rich Nosek, Denis Peterson, Mark Rosenberg, Eli Rotenberg, Charlie Verboom, Jeff Willer

Special Presentations

Detailed reports from:

Gary Jung, Jeff Willer, John Staples, Rich Nosek, Rosemary Evanoff, Ted Sopher, Keith Olson, Charlie Verboom, and Mark Rosenberg

Charge to Committee

The Committee would provide a report that will consist of findings, issues and recommendations on issues pertinent to computer standards at LBNL.

Facts and Findings are the identification of pertinent facts surrounding the topic under discussion and will create a common body of knowledge

Identification of issues will result in the discussion of items that might not be easy or useful to resolve.

Recommendations will be directed to users (scientists, administrators) and/or support staff (ITSD) in regard to actions that they can stop/start/encourage. Recommendations might be content or process in nature.

“What we might accomplish is an agreement about what is and is not true, and what is best for this institution. Result may be to validate what we’re currently doing. Rather than looking at saving money, assume a fixed budget and seek to increase effectiveness.” -Sandy Merola.

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Establishing a Set of Standards

Standardization of computer hardware and software should point the way to higher quality offerings and support to all LBNL computer users, from scientists to administrators. ITSD must supply a minimum infrastructure (email, networking, administrative applications and cybersecurity) under an essentially fixed overhead and fixed recharge rate. Efficiencies derived by some sort of standardization of hardware and/or software should result in improved service to users, as measured by a metric including all costs across the Laboratory, not just to ITSD.

The focus of the committee is *computer standards*, not an overhaul of how ITSD does its business: In fact, ITSD already provides a number of high-quality services, as described in a later section.

Recommendations will be directed to two audiences: ITSD/CSAC and Users. The committee's goal has been to solicit input from any concerned group and to continue to encourage experimentation with leading-edge technologies in both ITSD and user groups. In the process of this experimentation, we may find valuable technologies for future adoption. An example is the current informal work in evaluation of Open Office.

Guiding Principles

- Best practices vs. mandatory requirements
- Balance between minimum and maximum standards

Drivers for standardization

- Economies of scale
- Reduction of security risk
- Web-based future at LBNL
- Marketplace driven
- Ability to collaborate
- Reliability

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Process

The formation of the Computer Standards Committee was announced at the October 5th, 2001, CSAC meeting and the committee's first meeting took place on October 16th. The committee comprises twelve members, seven from the divisions (AFRD-2, Physics, ASD, Engineering, ALS and Life Sciences), and the rest from the ISS and CIS departments of ITSD.

Initially, eight resource people were named to provide specialized information to the committee. Others were added during the life of the committee.

Heather Pinto served as administrative assistant to the committee, scheduling meeting times and venues, and maintaining a closed Web site serving committee records, presentations and minutes.

John Staples chaired the committee; Paul Barale served as recording secretary.

The committee heard 14 formal presentations from representatives of various ITSD resource groups and user groups, most of which are reproduced in the appendix.

The committee selected topics of interest based on perceived areas of improvement in ITSD services under constant funding (not clear what this means). Many topics were considered, some outside the charter of the committee, which are listed in this report as areas for further consideration by ITSD and CSAC.

The collective expertise of the committee assessed each topic and based on their knowledge and input from expert sources, formed the recommendations in this report.

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Topics

Recommendations may apply to ITSD [ITSD], the LBNL user community [USERS] or both [ITSD/USERS].

What does ITSD support of standards mean? To provide the appropriate level of support for each of the recommendations, ITSD's efforts may also involve one or more of the following areas:

- On-Site Training
- Procurement (BOA/Procurement Card)
- Help Desk assistance/referral
- Financial support
- Information and FAQ
- On-site or central service maintenance
- Centers of excellence

What does LBNL user community support of standards mean?

- Giving strong early consideration to suggested standards when deciding what computer to buy.
- Taking responsibility for purchase decisions that are non-standard and realizing ITSD only provides Central Support for standard systems

List of Topics addressed:

- "Lifeline" business applications
- Web Browsers
- Standard Web application development tools
- Document interchange
- Procurement assistance
- Desktop hardware and software support
- Macintosh support
- Scientific workstation support (UNIX/Linux)
- Backups and archiving
- Informal centers of excellence
- Security issues
- Laptops/PDAs

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Corporate (and "Lifeline") business applications

Certain LBNL "Corporate Applications" are essential to day-to-day operation of all Lab employees, regardless of platform or operating system. For this reason, they were classified as "Lifeline" applications by the committee and include:

1. Email
2. Calendar
3. LETS (Timekeeping)
4. IRIS (Data Warehouse)
5. Purchasing (including Procurement Card)
6. Asset Management
7. Human Resources Self Service

All references to Lifeline applications refer to these seven items.

Facts and Findings

The Laboratory follows a philosophy of acquiring and implementing commercial software for its major institutional information systems, whenever feasible. For strategic purposes some systems are developed in-house, but always through the use of commercial software development tools.

During the recent past, client-server technology has been the predominant technology for corporate applications. Beginning in 1995 the Laboratory has acquired and implemented PeopleSoft's enterprise software for its major institutional Financial and Human Resource information systems. In its client-server versions (through 7.5) PeopleSoft has supported only the Windows client. This has been a primary driver for the establishment of a Laboratory administrative standard for the use of Windows for these corporate applications.

More recently, Web-based information systems have become technologically feasible and available in the commercial software marketplace. Specifically, PeopleSoft's entire application suite is Web-based beginning with version 8. Similarly, other commercial software vendors are beginning to deploy their products via Web browsers. PeopleSoft and other vendors have certified that their Web-based products support both Netscape and Internet Explorer, but, largely for the reasons described in the following section, have advised that their products' performance will be much better on Internet Explorer than on Netscape. Preliminary tests at LBNL are showing this to be true in terms of both response time and robustness.

Currently most of the Laboratory's major institutional information systems are client-server based, and most of these client-server based systems support Windows clients, but not Mac, UNIX, or Linux. There are currently a few Web-based applications, one of which, IRIS (the Laboratory's Data Warehouse) supports only Netscape. In the next few years there will be a profound shift in LBNL's corporate applications away from client-server technology and toward Web-based architecture. Due to the strong commercial marketplace support for Internet Explorer, many of these applications will be more extensively supported on the Internet Explorer browser than on Netscape.

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The “Mac versus Windows” issue, historically contentious at LBNL, will become less significant as Web browser based corporate applications are deployed. Both Internet Explorer and Netscape are generally available for the Macintosh, and, barring deficiencies in these browsers’ Mac implementations, Mac users will soon (in the next few years) have access to corporate applications that until now have been Windows-only.

Issues

The future of Netscape is not clear. Netscape’s market share is diminishing, and it is not as well supported by major software vendors as Internet Explorer.

Internet Explorer is not currently available for UNIX or Linux operating systems.

Recommendations

- Develop and deploy major corporate business applications, when feasible, to support both Internet Explorer and Netscape. [ITSD]
- Make every reasonable effort to ensure LBNL Lifeline applications are accessible from Windows, Mac, UNIX, and Linux desktops [ITSD]

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Web browsers

Facts and Findings

Microsoft's Internet Explorer has a commanding share of the browser market. Based on an early 2001 study at a major California bank, Microsoft's Internet Explorer was used in nearly 81% of the sessions and Netscape in only 19% of the sessions. In a more recent update in early 2002, Microsoft's share has climbed to 90% with Netscape dropping to approximately 10%. This is significant in that it is a major driver for vendors of commercial software deployed through the Web and indirectly impacts the choices LBNL has for third-party business software.

Also as part of the statistics gathered on Web site usage, it was determined that Microsoft Windows platforms dominate the client market. 93.5% of the users were running some form of Windows operating system and 5% were running Mac OS. The rest were versions of UNIX/Linux. Again, this does not represent the population at LBNL, but it is a factor when vendors make development decisions for products that are targeted to the general population.

As an example of the impact of browser trends, PeopleSoft (LBNL's primary vendor for business software) has certified its new Web-enabled version 8 for both Netscape and IE, but they have advised that performance will be much better on IE. Other vendors have given us similar advice regarding Netscape vs. IE.

Applications are moving from client/server-based to Web-based, generally to Internet Explorer. Marketplace support model favors Internet Explorer over Netscape. OS platform and browser support is market driven. Windows has a commanding share of the OS market. Internet Explorer has a commanding share of the browser market. Both LBNL and marketplace support model has favored Windows over Mac OS.

The LBNL standard browser is Netscape. This is due, in part, to our use of the Netscape Mail server and client software as the standard messaging system. When a Netscape client receives electronic mail with hyperlinks, the default browser that is invoked when the link is invoked is Netscape. For applications that are designed for IE, this becomes a problem.

Issues

For infrastructure software, the browser, not the platform, is now the primary issue. The choice of browser is becoming the focus of development and deployment decisions. For internally written software, there may be a need to build for both Netscape and IE for standard platforms, however this adds to the overall cost.

Another complexity involving browser selection is that the implementation of a given browser is not identical on all platforms. For example, Windows Internet Explorer does not render the same as Mac Internet Explorer. Although platform dependency is not as critical as browser selection, it is a factor.

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The choice between Mac and PC seems fairly neutral (Mac supports IE), but UNIX/Linux may be in jeopardy as desktop machines that can support Lab applications. LBNL Lifeline applications must be supported on UNIX/Linux, which does not have IE available.

Recommendations

- Add Internet Explorer to standard / supported browser list [ITSD]
- Support a mail client that will support IE as a default browser. [ITSD]
- Continue Netscape support for Lifeline applications [ITSD]

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Standard Web application development tools

More and more, LBNL-supplied services are migrating from a client/server to a Web-based approach. At the same time, a wide range of software development tools are used by ITSD's central services and TEID to create Web applications. By adopting standards for Web-development tools, the Lab can improve the portability of these Web-based services. The following discussion pertains to those applications and those tools.

Facts and Findings

Macromedia's Dreamweaver and/or a standard text editor produce standard HTML code that is transportable across platforms. Microsoft's FrontPage produces non-standard HTML that is not transportable across platforms.

Server-side cross-platform compatibility is a significant consideration when developing database-driven Web applications.

Microsoft's ASP and Sun's JSP are the leaders in RAD (Rapid Application Development) and dynamic Web content generation. JSP and the underlying Java code is completely platform independent and will run on UNIX/Linux and Windows servers. Microsoft's ASP is platform dependent and will run only on the Windows server.

JSP, ASP, PERL (or any other) server-side technology has no influence on the client browser's ability to properly display a Web page or application. Client-side code does have this impact, such as VBScript, JavaScript, HTML tags, etc.

A complete IDE (Integrated Development Environment) allows for increased productivity and source code generation. The best JSP/Java IDEs at this time are Oracle's JDeveloper, Borland's JBuilder and Sun's open source NetBeans.

A properly implemented software development methodology ensures best practices for large-scale software development are followed.

The Oracle Database is the product of choice for corporate data storage. The Lab does support this Oracle product.

Microsoft Access and FileMaker Pro are the desktop database products of choice. Both are used at the Lab as appropriate, based upon the needs of the application. The Lab provides minimal support for both products.

Apache Web server and the TomCat Java Server Engine are the products of choice and are currently supported.

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Issues

If ITSD supported one HTML Web development tool such as Dreamweaver for end users, two benefits would be gained.

- 1) Increased productivity when administrative and technical staff change jobs at the Lab
- 2) Opportunity for sharing knowledge with other HTML programmers.

Cross-platform source code compatibility is critical for code migration and long-term application maintenance.

Dependence upon a single-vendor server solution prevents the Lab from leveraging existing hardware infrastructure.

The Lab currently does not use a standard software development methodology tool for large-scale software development.

Corporate data should be shareable across applications.

The Lab has not yet standardized on a standard desktop database model.

The Lab has not yet standardized the Web server model.

Recommendations

- Recommend Dreamweaver as the standard static Web page development product and provide on-site training, Help Desk support, and central service support as required. [ITSD]
- Recommend JSP/Java for developing dynamic Web content. [ITSD]
- Recommend Rational Rose or equivalent UML CASE tool for large-scale software development. [ITSD]
- Recommend Oracle as the database for storing corporate data. [ITSD]
- Recommend the desktop database standard include both Microsoft Access and FileMaker Pro. [ITSD]
- Recommend the Apache Web server and Tomcat JSP Engine for corporate business applications [ITSD]
- Users who expect any ITSD involvement in initial development and future support for application development should use these tools. [USERS]

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- Standard application development tools need to be reviewed [annually] by the ITSD Technical Architecture Committee

[ITSD]

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Document interchange

Facts and Findings

Documents at LBNL are exchanged in various electronic forms, such as email attachments or Web pages. There is no guarantee that the receiver will have the same word processor, Web browser or email server as the sender, or even the same machine or operating system.

Documents with wide distribution, in particular, LBNL administrative memos and notices need to be readable on any supported platform and word processor. Interactive administrative forms (P2Rs, etc), surveys and documents need to be editable. The "de facto" administrative standard word processing application at LBNL is Microsoft Word. There are a number of difficulties associated with this however:

1. There are many versions of Word in use at LBNL, and there may be incompatibilities between versions.
2. Microsoft Word exists only for Windows and Macintosh machines – not available for UNIX/Linux platforms.
3. This locks us into a single vendor, and one that is presently tightening its licensing policy.
4. Not everyone likes Word (or can afford it?)

Issues

The variety of computer platforms and software applications used at the Lab has led to some incompatibilities when documents are exchanged. Although Microsoft "Office" formats have emerged as the de facto standard, there are other approaches which may merit investigation.

Recommendations

1. For read-only documents:

- PDF or vanilla HTML for all read-only documents [USERS]

2. For read/write documents:

- use simple document structures and/or save as .txt, .rtf, [USERS]
.doc (de facto standard), .xls (for Excel docs), .ppt (for
PowerPoint docs) and .dwg (autoCAD docs).
- test cross-platform read/write for critical documents [ITSD/USERS]

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- Investigate document translation tools and make available via Web download
 - Word translators between Word versions
 - Tools for Document interchange
 - between word processing applications
 - between platforms - Open office/Star office?

- [ITSD]

- | | |
|---|--------------|
| 3. Identify or establish a Lab resource for translation of non-standard document types into a common document format. | [ITSD/USERS] |
| 4. Investigate OpenOffice/StarOffice as a supported standard | [ITSD] |
| 5. Standard LBNL documents (PPR, etc.) need to be cross platform compatible and reasonable to use. | [ITSD/USERS] |
| 6. Evaluate feasibility of using open source document formats for future document interchange. | [ITSD/USERS] |

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Open-source software

Facts and Findings

The cost of commercial products is increasing and the ability to buy upgrades to some popular products (Microsoft Office, for example) will be eliminated in an effort to stimulate the acquisition of software maintenance contracts (called Software Assurance by Microsoft)

Open Source products are free to the customer. They are protected under a variety of licenses, including the GNU license, which ensures that the software will continue to be available to the public.

Recently, the open source community has released OpenOffice 1.0 (a product that can provide similar functionality to that provided by Microsoft Office. In addition, Sun Microsystems has released a supported and enhanced version of OpenOffice, called Star Office 6.0. OpenOffice will run on UNIX/ Linux and Windows platforms. There is some indication it will also be ported to Mac OS X (which is UNIX-based).

According to Sun's general manager for Desktop and Office Productivity, Mike Rogers, the code base for OpenOffice and StarOffice are synchronized daily. "The main differences between the two," says Rogers, "is that OpenOffice must be distributed with open-source substitutes for technology that we had to license for inclusion with StarOffice." Examples of this are the database software, some fonts, the dictionary and grammar software, and the filters for opening WordPerfect files.

Gartner Research feels that StarOffice has a chance of gaining 10% of market share.

Mozilla, an open-source alternative to the Netscape browser, is also continuing to improve. Version 1.0 should be released this summer.

Issues

LBNL has a diverse cross-platform computing environment, which includes many versions of UNIX/Linux, Windows and Mac operating systems.

Microsoft Office does not work on UNIX/Linux platforms, yet common business documents (P2R forms, for example) are expected to be used by owners of all these platforms.

Recommendations

- Investigate and report on the feasibility of supporting [ITSD]
OpenOffice/Star Office as a Lab Standard

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Procurement assistance

Facts and Findings

The Lab currently has Basic Ordering Agreements (BOAs) for Micron desktop computers and Dell laptops, both of which are Windows-based PCs (although an option for receiving a Linux version of system is available. Although these BOAs greatly streamline the procurement process, less than one third of the computers purchased by the Lab are bought this way. This restrictive approach affects computer support, system cost and employee productivity. Here is a breakdown of computers purchased in FY01:

Laptops:

- Dell - 30%
- Sony - 30%
- Mac - 21%
- IBM - 11%
- Other- 8%

Desktops/PC market:

- Micron - 33.5%,
- Dell - 25.3%,
- Mac - 6.2%,
- FineTec* - 18.9%,
- other (Sun, and a large number of other vendors) - 17.1%

*Fine Tec has been the source of custom Linux servers, desktops, and clusters.

Lawrence Livermore National Laboratory has a purchasing agreement with a commercial reseller of Mac and Dell equipment. The vendor provides custom software loads and on site warranty service.

Issues

Windows is the primary platform for corporate business applications and administrative services at LBNL. UNIX/Linux and Mac platforms continue to support the scientific and publishing communities and should be provided the same advantages for acquisition that Windows PCs are afforded.

Providing acquisition support does not infer the platform will be supported in other ways, with exceptions as outlined in this report.

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Recommendations

- Continue Basic Ordering Agreements (BOAs) for a standard PC which can be used for Windows or Linux [ITSD]
- Develop a Basic Ordering Agreement for Mac desktops and laptops [ITSD]
- Extend Procurement Card privileges for all BOA purchases in order to reduce the time and cost to acquire computer equipment. [ITSD]
- Promote group software licensing for commonly used products and advertise the availability of these agreements on the Web. [ITSD]
- Streamline the Waiver Process so that acknowledgement of standard hardware and software support issues can be made by both the end user and the person with signature authority for the Project ID. [ITSD]
- Review the acknowledgement for standard hardware and software and ensure the user understands the limitations of central support if an alternative to the standard is acquired. [USERS]

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Desktop hardware and software support

Facts and Findings

Based on the first six months of FY02, approximately 15% of the Computing Infrastructure Support (CIS) Department time and material (T&M) recharge business is based on on-site support of Mac hardware and software (the month to month numbers range from 10% to 26%). 85% of the effort supports PCs. The Mac/PC Support Group (MPSG) has 5 equivalent FTE's that support T&M work at the Lab. One is a Mac expert.

The Help Desk (funded by overhead) has four staff members and a team leader. One staff member is a Mac expert. No one on the staff can provide UNIX support, but staff members are receiving training in UNIX systems.

Industry trends indicate that the UNIX market will consolidate on Sun Solaris and Linux. Fewer UNIX/Linux systems are being installed by CIS, due to advances in the Linux installation and configuration technology.

Approximately six hours is required to build and test a Lab-standard load on a Windows machine. Once the load has been built, it takes approximately 30 minutes to image a new system. Events which require new software loads include:

1. New versions of an operating system
2. A significant upgrade to a current version and
3. Major change in components (motherboard changes for example).

Because of the large number of PC hardware component vendors, there is a need to standardize around one model in order to develop an economy of scale. This is not true for Macs or equipment from vendors of proprietary hardware.

Standard software on the standard Windows platform includes the following: Norton Antivirus, Microsoft Office (Word, Excel, PowerPoint, Access), Netscape email client, Steltor Calendar Client, J-initiator (Java run time environment required for WebLETS), Netscape Navigator Browser, Internet Explorer Browser, Adobe Acrobat, Winzip, Datafellows F-Secure SSH 1.13 (LBL Version), and Netware client (if required).

Issues

It is not economical to maintain on-site support for hardware that is not in common use.

Maintenance of Xerox and Tektronics printers is very expensive and not offered by many vendors. At present, the cost of a Tektronics printer repair is \$295 for the first half hour, and \$75/ for each additional 15 minutes. The only known source for support is Xerox Corporation.

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In contrast, repair for HP printers is less than half that amount and can be outsourced from multiple vendors.

Recommendations

- Provide Lifeline maintenance for equipment acquired via a basic ordering agreement initiated by ITSD [ITSD]
 - In-house for high volume equipment (PCs, Macs)
 - Outsource as needed to off-site vendors: HP printers and possibly Macs in the future if business decisions dictate a change
 - Solicit vendors who can provide on-site warranty support at no charge to the user
- Develop and maintain a buyers guide for recommended printers and provide lifeline maintenance [ITSD]
- Provide Help desk assistance for standard software [ITSD]
- Continue to develop the LBNL software download site for licensed and security software. [ITSD]

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Macintosh support

Facts and Findings

Although the Laboratory has identified PCs as the standard desktop system, there is a significant Macintosh population at LBNL. There is also an active Macintosh Users Group at the Lab.

As LBNL corporate applications tend toward being Web-based, development issues become centered less on “which platforms need to be supported?” and more on “which browsers need to be supported?”

With the release of Macintosh OS X based on Free BSD, the Mac has become an interesting and viable UNIX/Linux variant.

Issues

There is no BOA or quantity-buying program for Macs at LBNL.

Need to address “standard maintenance” for Macintosh

Need to update current Macintosh back-up system. This is now being done and Mac users are being actively recruited to switch to the new Veritas backup system..

Need a cheaper alternative to the current Microsoft Office pricing structure (either site license/volume discount or availability of an open source alternative (OpenOffice)

Lifeline software for Mac OS X (i.e. need a browser that works)

Recommendations

Relevant recommendations fall into other general categories. See the following sections in this document for recommendations relating to Macintosh issues at LBNL.

- 1) Browsers
- 2) Procurement assistance
- 3) Corporate business applications
- 4) Desktop hardware and software support
- 5) Backups and archiving
- 6) Informal centers of excellence

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Scientific workstation support (UNIX/Linux)

Facts and Findings

Linux has a growing user base at the Lab. UNIX desktop machines, as well as some Windows machines, are being replaced by Linux workstations. This is being driven by cost and performance advantages.

Macintosh OS X, based on Free BSD, is now available and is a UNIX/Linux type of operating system.

Issues

Without a supported standard the number and diversity of Linux machines will be very large. This type of environment will be difficult to maintain efficiently.

As more users install Linux with no assistance from ITSD, the requirement and benefits of central UID/GID registration will not be apparent. There is a risk that the environment will become even more decentralized with a negative impact on interoperability.

With the emergence of Mac OS X, LBNL will need to address the issues involved with Free BSD on Macs as a Linux work-alike.

More users are in possession of UNIX/Linux boxes and are not trained in systems administration, particularly security issues.

Recommendations

- Create a standard Linux load [ITSD]
- Provide centralized Linux support [ITSD]
- Maintain a central user and group id namespace for all UNIX/Linux users. Require new users to register with this service. [ITSD/USERS]
- All Linux systems will require qualified system administration, either through Central Services [ITSD] or a local trained system administrator [USERS]

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Backups and archiving

Facts and Findings

Several years ago there were three separate backup systems that were run by ITSD to backup the UNIX community. Three years ago these three systems were consolidated into a single backup service based on Legato software. Last year the Lab started the process of moving the UNIX backups over to Veritas. This is a more robust system that should take less effort to maintain. The expected result will be lower cost backup services with an increase in the client base.

Issues

In order for Veritas deployment to be successful additional users will need to be enrolled in the service.

The Lab needs to implement a long-term storage method for data (archiving).

Recommendations

- Recommend LBNL policy on backups be advertised and promoted. Each PI or designated line manager must actively determine the backup policy for each project. [ITSD/USERS]
- Recommend that ITSD provide an avenue for backup services which supports all "standard" platforms (Windows PC, Mac, Linux, UNIX) [ITSD]
- Make retrieval of backed-up files simple and straightforward: must be user driven (backup and restores should be controlled by the user) [ITSD]
- Provide a service for data archiving [ITSD]

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Informal centers of excellence

Facts and Findings

Some software products are commonly used at the Lab. Among these are LabView, certain statistical analysis programs (SAS), and AutoCAD.

There is a need to advertise expertise in these areas so new users, or those with less frequent needs, can be given assistance.

User groups can provide a valuable venue for information interchange. Examples are the Linux Users Group (LUG) and the Mac Users Group (MUG).

Issues

The ITSD Help Desk cannot be expert on everything – where expertise exists within LBNL, we should make use of it. The real issue is creating a mechanism that allows scientists to locate the resident experts efficiently.

Note: some informal Centers of Excellence are really Birds of a Feather groups, but can fill the same need

Recommendations

- Sponsor and/or participate in key users groups. [ITSD]
- Ensure Help Desk is aware and can redirect questions/problems to the appropriate Center of Excellence. [ITSD]
- As user groups /application experts develop, register with ITSD/Help Desk so referrals can be made [USERS]

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Laptops/PDAs

Facts and Findings

As laptop computers and personal digital assistants become smaller and more powerful, Lab employees are moving increasing to these systems. In the areas of laptops and PDAs, hardware is changing rapidly, with no slowdown in sight. For this reason it is difficult to suggest a "Standard" to be used by the Lab.

The current CIS Standards page provides a link to the Dell BOA for purchasing laptops. It does not give any information on what the buyer may want to consider when purchasing a laptop.

Issues:

Integration with the Lab infrastructure is a crucial issue with both laptops and PDAs.

Laptops usually need to be able to connect with projection systems as well as the Internet. Configuration allowing both with the most common interfaces are likely appropriate.

Use of PDAs is increasing. Synchronizing with the Lab calendar system is most likely a concern for the user.

Recommendations

- Provide buying advice; cover issues from reliability to compatibility. Give suggestions on hardware configuration for the most common usage scenarios. [ITSD]
- Users are encouraged to provide feedback to ITSD from their experiences with purchased devices. [USERS]
- Continue to provide a BOA for procurement of laptops. [ITSD]
- Recommend a standard for PDAs be developed. [ITSD]

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ITSD currently provides high-quality support in a number of areas

Guiding Principle: Do not make recommendations where good standards already exist or where other groups already have jurisdiction and are taking action.

Security

(Currently being well covered by CPPM/CPIC, but some software support and training issues were addressed in this report).

- Purchase site licenses for cybersecurity software [ITSD]
and make them part of the standard load
- CPPM/CPIC should develop a policy that [ITSD]
adequately deals with email and Web server
cybersecurity
- CPPM should provide sources of software fixes (if [ITSD]
not the software itself) for each critical security
issue announced through their office
- Provide advice for remote users in regards to [ITSD]
cybersecurity (use of personnel firewall software,
for example)
- CPPM should continue to provide annual security [ITSD]
training refresher classes
- CPPM/CPIC should propose a policy regarding [ITSD]
legitimate LBNL visitors who bring in computers
(particularly laptops) and want to use the LBNL
network
- Qualified local system administrators should take [USERS]
the CPPM-offered annual security training refresher
class

Electronic Mail

The Electronic Mail Infrastructure at LBNL is a well-supported, standards-based application. LBNL uses the Netscape server and client software products from Iplanet. The server-side software is standards-based (IMAP) and integrates with an LDAP directory service. Mail can be accessed via the Web as well as a client. In the future, the default browser that is invoked by reading email attachments should be selectable (IE or Netscape, for example) because certain vendor-provided applications are being developed primarily with IE in mind.

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Wireless

(Policy being written by NTD, security issues to be handled by CPIC and CPPM).

Networking

(Already established as a standard service).

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Side Issues

When the committee was given its direction, it was expected that a number of other topics or ideas would arise from the discussions, but that these would be outside the purview of the committee. The committee decided that several of these topics would merit additional consideration by other Lab groups or organizations. In some cases, problems with the status quo were identified.

Energy conservation standards

Although the Laboratory is a world leader in assessing and improving energy efficiency, there does not appear to be any information locally available regarding energy use of available computers and peripherals.

Consistent AV interface in all AV-equipped rooms

TEID has made some progress in improving the user-friendliness of conference room AV facilities, but the status of this effort is not clear.

Rapid expansion of videoconferencing – standardization may be needed**Remote access**

(It is unclear what the appropriate level of support for off-site users of LBNL systems should be. These include travelers, staff working at home, or staff working on campus.)

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Conclusion

Five years ago, a discussion of computer standards would most likely have boiled down to a “Mac vs. PC” exchange. Today, however, an investigation of such standards is more likely to focus on the applications available and how to maximize their benefits to users of multiple platforms, including Linux and PDAs, systems that barely existed five years ago. This change demonstrates the highly time-dependent nature of personal computing – and the difficulty in setting standards that are realistic and meaningful.

As a result, the work of CSAC’s Computer Standards Committee has resulted in recommendations that surprised even the committee members. Here are some of the key recommendations from the committee.

Applications that provide the administrative “lifeline” for the Laboratory must be able to be supported by all computers, including PCs, Macintoshes, UNIX workstations and Linux boxes. The applications are more important than the architecture.

The procurement process for buying computers, while streamlined for desktop and laptop PCs, does not reflect the reality of computer buying by Lab groups. Basic Ordering Agreements should be implemented for buying other computer systems.

In light of the growing range of systems used by Lab employees, it’s important to establish common file formats for exchanging documents. These formats must also be compatible with systems outside the Laboratory.

Whichever recommendations are ultimately adopted and implemented, it’s important to bear in mind that there are two affected audiences – ITSD, which will provide the services, and the Lab users who will utilize the services. Both groups need to be taken into account as decisions are made.

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Appendices and Presentations

Materials and presentations to the Computer Standards Committee can be found at:
http://www.lbl.gov/ITSD/CSAC/CSC/csc_index.htm